BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 91-606-E - ORDER NO. 92-275

JUNE 19, 1992

IN RE: Application of South Carolina Electric & Gas Company for A Certificate of Environmental Compatibility and Public Convenience and Necessity for the Construction and Operation of a 385 MW Pulverized Coal-Powered Generating Plant near Cope, Orangeburg County, South Carolina.	)	ORDER GRANTING CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC CONVENIENCE AND NECESSITY

This matter is before the Public Service Commission of South Carolina ("the Commission") to consider the Application of South Carolina Electric & Gas Company ("the Company"; "SCE&G") for a Certificate of Environmental Compatibility and Public Convenience and Necessity, pursuant to S.C. Code Ann. §58-33-10 et seq. (1976). The Company is seeking authority from the Commission to construct and operate a 385 MW pulverized coal-powered generating plant, and associated transmission facilities. The plant is to be located on a site containing approximately 3,200 acres, owned by the Company, near the Town of Cope, Orangeburg County, South Carolina.[1]

The Commission's Executive Director instructed SCE&G to

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1. By Order No. 91-1141, dated December 30, 1991, the Commission denied the Consumer Advocate's Motion to Dismiss SCE&G's application.

publish a prepared Notice of Filing and Hearing in newspapers of general circulation in the affected areas. The purpose of the Notice of Filing and Hearing was to inform interested parties of SCE&G's application and the manner and time in which to file the appropriate pleadings for participation in the proceeding. SCE&G complied with this instruction and provided the Commission with proof of publication of the Notice of Filing and Hearing. Further, copies of the Company's application and Notice of Filing and Hearing were mailed to interested persons.

By a Petition to Intervene, dated November 18, 1991, the Consumer Advocate for the State of South Carolina (the "Consumer Advocate") sought to be and was admitted as a party to these proceedings.[2] Pursuant to S.C. Code Ann. §58-33-140, the following were statutory parties to this proceeding: the Department of Health and Environmental Control, the Wildlife and Marine Resources Department, Department of Parks, Recreation and Tourism, and the Water Resources Commission. Only the Wildlife and Marine Resources Department (Wildlife and Marine Resources), of this group, appeared at the hearing.

At the hearing in this matter, which began on January 27, 1992, and which ended on January 29, 1992, the Company was represented by Patricia T. Smith, Esquire, Randolph R. Mahan,

2. By Petition to Intervene dated December 20, 1991, Tenaska, Inc. ("Tenaska") sought admission to these proceedings as a party. This petition was granted by Order No. 92-4. By letter request dated January 17, 1992, approved by Order No. 92-34, Tenaska withdrew as an intervenor and did not further participate as a party of record.

Esquire, and Francis P. Mood, Esquire; Raymon E. Lark, Jr., Deputy Consumer Advocate, represented the intervenor, Consumer Advocate; and F. David Butler, Staff Counsel, represented the Commission Staff (the "Staff"). On January 29, 1992, James A. Quinn, Esquire, appeared on behalf of the Wildlife and Marine Resources Department, whose Chief of the Non-game and Heritage Trust Program, Thomas Kohlsaat, testified as a subpoenaed witness for the Consumer Advocate.

The record before the Commission consists of the Company's Application and exhibits thereto (Exhibit A consisting of four volumes, Exhibit B being proof of service, and Exhibit C being the form of public notice); the testimony of Company witnesses, Bruce D. Kenyon, President and Chief Operating Officer (SCE&G), Kevin B. Marsh, Vice President, Finance, Treasurer and Secretary (SCANA), Eli S. Nauful, General Manager, Generation Projects (SCE&G), W. E. Moore, Vice President, Fossil and Hydro Operations (SCE&G), Mitchell S. Tibshrany, Jr., Vice President, Transmission and Distribution Engineering and Power Delivery (SCE&G), and, rebuttal witness, Stephen Eugene Martin, Manager, Residential Marketing and Demand-Side Management (SCE&G); the testimony of the Consumer Advocate witnesses, Paul L. Chernick, President, Resource Insight, Inc., and Thomas Kohlsaat, Chief of the Non-game and Heritage Program, Wildlife and Marine Resources Department; the statement of Nancy Vinson, Chapter Representative of the Sierra Club; and those documents entered into the record as Hearing Exhibits 1 - 22. Based upon a thorough consideration of the evidence in the record

and the applicable law, the Commission makes the following findings of fact and conclusions of law.

FINDINGS OF FACT

I. Public Convenience and Necessity.

A. Need for Generation Capacity. SCE&G's planning organization, after allowing for factors which reduce or minimize needs for generation capacity, such as demand-side management (DSM) programs, has forecasted that electric energy needs in the Company's service territory will increase at an annual rate of 2.4% during the decade of the 1990's. Similarly, electric peaks are forecasted to increase at an annual rate of 2.2% over the same period. TR. Vol. 1, pp. 22-23, 43-44. In its projections of the peak load growth originally set at 2.6%, the Company factored in the economic slow down and further lowered the peak load growth to a projected 2.2%, based on bringing in a significant amount of demand side management. SCE&G's projections for the balance of the 90's appear to be reasonable. TR. Vol. 1, p.44. In order to reliably meet the electric power needs of its customers, SCE&G attempts to maintain a reserve capacity margin of 20%. TR. Vol. 1, p. 83. This margin enables SCE&G to accommodate events such as forced outages and peak demands higher than those forecasted. TR. Vol. 1, p. 23. With energy forecasted to grow at an annual rate of approximately 2.4%, and peak demand expected to increase at an average annual rate of 2.2% between now and 1996, SCE&G predicts it will be 424 MW short of a prudent reserve margin unless Cope is built. Without the construction of Cope, the reserve margin in

1996 will be only approximately 8.2%. The addition of the Cope Plant would restore SCE&G's reserve margin to 21.3%. TR. Vol. 1, p.83. The 385 MW to be provided by Cope will represent approximately 15% of SCE&G's base load coal capacity and about 12% of its total base load capacity when the unit comes on line in 1996. TR. Vol. 2, p. 77.

The Commission finds and concludes, after an examination of evidence before it, that the 385 MW of generating capacity will be needed by SCE&G by the year 1996.

B. Integrated Resource Planning and Supply Side/Demand Side Management Alternatives. Integrated Resource Planning (IRP) is a process by which electric utilities plan to provide existing and future customers with reliable and adequate electric power and energy at the lowest cost consistent with sound financial and technical practices. There are three primary components to SCE&G's integrated resource plan: the forecast component, the demand side component, and the supply side component. The goal of Integrated Resource Planning is to find the mix of supply side and demand side resources which will provide reliable power at minimum cost to meet the forecasted needs of a utility's customers.

The first step in SCE&G's IRP process is the development of energy (sales) and demand forecasts. A sales forecast is developed for each class of service. Once the sales forecast has been completed, a peak demand forecast is developed for both summer and winter peaks, taking into account the general economic situation and activity in each utility service territory and the general

level and types of weather stress of the season and specific weather conditions each day. Next, the Company combines the sales and peak demand forecast results along with the results of its individual demand side program to produce a supply side plan. The supply side plan identifies any need for new generating capacity and produces a proposed generation expansion plan. In developing the supply side plan, SCE&G defines the operating characteristics and production costs of existing generating facilities as well as other competitive supply technologies. SCE&G includes in its evaluations such items as heat rate, net dependable capability, outage rates, fuel requirements, and fixed and variable operating and maintenance costs. Using computerized modeling techniques, forecasted sales and projected peak demand data are combined, along with generating plant operating characteristics, production costs, and basic economic assumptions to produce a supply side generation expansion plan. TR. Vol. 1, pp. 55-59.

SCE&G filed its first Integrated Resource Plan with the Commission in 1989. This plan identified the need for a base load plant in 1996. The 1989 IRP was updated in the first part of 1991 in conjunction with the Company's analysis and decision to build the Cope Project. The Cope Project was approved by SCE&G's Board of Directors in June, 1991. The updated 1989 IRP was filed with the Commission in September, 1991. TR. Vol. 2, pp. 28, 29. In the fall of 1991, SCE&G, Duke Power Company, Carolina Power and Light, the Commission Staff and the Consumer Advocate agreed to certain formal procedures for filing Integrated Resource Plans with the

Public Service Commission every three years. The first such plans were filed with the Commission in April 1992. In the final Commission Order on the subject, Order No. 91-1002, which was issued November 6, 1991, the Commission established certain procedures for the filing of these plans.

Since both of SCE&G's IRP filings predate the issuance of Order No. 91-1002, these early IRPs do not directly track the new Commission procedures in certain specifics, such as methodologies and programs. However, both reports are consistent with the stated objective outlined in Order 91-1002 which is "... the development of a plan which results in the minimization of the long run total costs of the utilities overall system ...". Order, Appendix A, at 1. However, the new procedures fully recognize that the "IRP process is dynamic and complex requiring various assumptions, forecasting techniques, and planning methodologies." Order, Appendix A, at 3.

Further, the Commission recognized that a utility must evaluate various demand side management programs as part of its planning process, in an effort to attain the goal of minimizing the cost of electricity to consumers. Accordingly, "to ensure proper evaluation, the screening of DSM resources can be based on more than one test. No single test is always appropriate for all situations." Order, Appendix A, at 5. The Commission clarified this further by stating:

> The utility must justify the use of a specific test or tests employed as part of the basis for adoption or rejection of a specific resource. No individual option that passes the TRC [Total Resource Cost] test shall be

> rejected solely on the basis of its failure of the RIM [Ratepayer Impact Measure] test, unless the utility demonstrates good cause for rejecting such option, consistent with subsection B (7) below. Order, Appendix A, at 5.

Section B (7), referenced above, specifies:

> A measure of the net benefits resulting from the options chosen within the IRP must be provided by each utility. The utility shall propose an IRP which minimizes total resource costs to the extent feasible, giving due regard to other appropriate criteria such as system reliability, customer acceptance and rate impacts. Order, Appendix A, at 6.

The Consumer Advocate claims that SCE&G neglected to use the total resource cost test to screen its demand side management programs in the 1989 and 1991 IRP documents. The Consumer Advocate further asserts that this could allow the Commission to dismiss the Company's planning efforts entirely and deny the pending request for a certificate for the Cope facility. Given the separate IRP docket, the Commission recognizes the concern expressed by the Consumer Advocate, but concludes that such action would not be appropriate in this docket, based on the Commission's overall view of the record in this proceeding.

Company witnesses testified that SCE&G re-evaluated its approach to DSM in light of Order No. 91-1002, which was entered in the IRP docket. It reconsidered its potential DSM options in the 1989 and 1991 integrated resource plans, and included other potential options which had not been included in the 1989 or the 1991 integrated resource plans. But even with this revised approach to estimating what the impact of any heretofore excluded DSM options could be, the result was 172 additional MW of deferred

demand. TR. Vol. 2, p. 30; Hearing Exs. 3, 21. This deferred demand was not enough to affect the decision to build the Cope Plant in 1996, and the Company concluded that building Cope was the best option for the Company to follow. TR. Vol. 2, pp. 30-31.

SCE&G has had experience with demand side management programs. As Eugene S. Martin, Manager of SCE&G's Residential Marketing and Demand Side Management Programs, testified, SCE&G has increased its labor commitment to DSM by over 200%; the number of market offerings in the DSM portfolio has tripled; the average amount of deferred capacity has increased by over 135% each year; the growth in DSM expenditures has been over 80% each year; and finally, SCE&G has invested over 18 million dollars in DSM efforts during the past five years. All of this has resulted in a net deferral of 57 MW during that period. TR. Vol. 4, p.96.

Bruce D. Kenyon, SCE&G's President and Chief Operating Officer, testified to SCE&G's "commitment to do as much as we reasonably can with demand side management." He stated that SCE&G had gained much experience with new demand side management technologies and had been stepping up its efforts for several years to employ these technologies. He further stated that meeting demand side management would be an increasingly important part of the Company's integrated strategy to meet its customers' growing demand. However, he believed that "even significantly more optimistic assumptions regarding the success of these programs do not undercut the appropriateness of the Cope decision". TR. Vol. 1, p.30. Based on the foregoing analysis, the Commission agrees

with this conclusion and so finds that certification is appropriate.

Therefore, the Commission finds and concludes that the proposed generating facility and the IRP analyses conducted in connection therewith are not inconsistent with our Order No. 91-1002.

While the Commission has concluded that it is not prepared to adopt the position of the Consumer Advocate in this proceeding, it wishes to emphasize several points. The testimony and exhibits offered by the Consumer Advocate make clear that SCE&G must continue to develop and refine its work in the DSM area. The Consumer Advocate has identified additional market segments, end-uses and measures which merit consideration and provide potential opportunities for additional DSM savings that should be addressed in future proceedings.

The Consumer Advocate, through the testimony and exhibits of Paul Chernick, has persuaded the Commission that it should and will expect committed and documented efforts from regulated utilities to actively implement cost-effective DSM programs. As the concept of DSM continues to develop and evolve, based upon a body of reliable experience, the Commission will expect to see examples of activities which will provide opportunities to reduce or defer the need for additional generation expansion. The Consumer Advocate has effectively raised many issues that merit attention in future proceedings before the Commission when companies attempt to expand existing generation capacity. The planning commitments made in the

IRP docket must be reflected in other proceedings before the Commission. The Commission is sensitive to the concerns and objectives of the Consumer Advocate with regard to DSM issues and will look to SCE&G to meet the commitments made by Mr. Kenyon in this docket.

The Commission intends to closely scrutinize any DSM programs that may be developed by SCE&G and the actual impact of such programs. For example, the Commission will monitor and evaluate the development and impact that DSM programs have on the need for the Company to add all of the internal combustion turbines (ICTs) contemplated in its 1991 generation expansion plan. In addition, the effective use and development of sound DSM programs may have the ability to postpone future expansions of the Cope plant. The Company will continue to have the burden of proving that it has pursued all cost effective DSM activities.[3]

C. Generation Strategies. Having concluded that the Company has reasonably forecast its generation need, giving appropriate consideration to DSM options, the Company must then select the appropriate generation strategy to meet that need. As Mr. Marsh testified, the Company reviewed many options to meet projected generation need. Basically three general strategies were explored: traditional strategy; peaker strategy; and purchase strategy. TR. Vol. 1, p. 68.

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3. DSM activities of SCE&G will be reviewed and evaluated in the context of its triennial IRP filings and the intermittant STAP filings.

The traditional strategy involves the building and owning of an appropriate mix of base load and peaking generation facilities. Under this strategy the Company considered building base load coal units of approximately 200 to 400 megawatts with internal combustion turbines at optimal intervals. From an operational viewpoint, this strategy gives the Company the most control over its generation assets. This is desirable since the Company is the entity with the obligation to serve its customers. TR. Vol. 1, p. 68.

In an effort to mitigate the financial effects of constructing and owning a base load plant, the Company also developed a lease option. Under this option, the plant would have been designed and operated by the Company, but owned by a leasing agent. From an operational viewpoint, this is equivalent to the traditional ownership option, since it leaves the plant under the control of the Company. From a financial perspective, it is similar to the purchase strategy discussed later. Leasing may mitigate the short-term need for equity capital. However, there are financial risks associated with leasing. Generally, under current practices, the financial community will impute a debt obligation equivalent to the net present value of future lease payments, thereby reducing interest coverage ratios and potentially jeopardizing the Company's bond ratings. TR. Vol. 1, p. 69.

The peaker strategy, which essentially relies on the installation of ICTs, has an advantage of lower initial capital outlays. The level of capital expenditures is particularly

critical over the next ten years, because during this period the Company projects the need for significant capital investments (approximately $300 million) to comply with the 1990 Clean Air Act Amendments. There were basically three variations of this strategy considered: All ICTs through 2010; ICTs until 2002, then base load coal through 2010; ICTs with conversions to combined cycle units through 2010. TR. Vol. 1, pp. 69-70. These options depend on natural gas and oil for fuel and have a lower installed cost per KW than coal-fired plants. However, due to the higher cost of gas when compared to coal, the produced cost per KWH and rates for customers are approximately the same under this alternative as the traditional approach. Customers would be paying less in base rates because of lower capital investment, but would pay more for fuel. Because of the lower capital outlays, the Company retains more financial flexibility. The conversion option to combined cycle units is appealing because these units, while not base load units, are considered intermediate units, and the Company could build the ICTs, and only convert to combined cycle as the need for energy grew. TR. Vol. 1, p. 70.

The primary drawback to the peaker strategy is the reliance on natural gas and oil for fuel. The gas and fuel oil markets have been volatile in the past, and there may be uncertainties such as availability and deliverability associated with gas as a base load fuel over the long run. In order for the peaker strategy to be viable, natural gas would have to be made available at a cost which enables the Company to generate electricity at prices comparable to

the other strategies. TR. Vol. 1, pp. 70-71.

The Company also explored a purchase strategy whereby base load capacity would be purchased from a non-utility generator (NUG), such as a cogenerator or an independent power producer. From the utility's perspective, the purchase strategy is appealing, because the Company is not required to invest its capital in generating facilities. However, there are operational risks because the plants are not under the Company's control. NUGs do not have an obligation to serve, and are essentially a financial investment involving a contractual obligation to provide generation to the utility. If this investment goes sour for any reason, the project may fail and cease to generate. The Company may well have legal recourse in such a situation, but that is not the same as having power to satisfy an obligation to serve. TR. Vol. 1, p. 71.

There also may be operational disadvantages to the purchase strategy. NUGs may not have load following capability (i.e., may not be able to be dispatched as load rises or falls) or, if the NUG is a cogenerator, the steam host may need steam all the time. In any event, the utility may wind up dispatching its system around the NUG. Thus, if there are cost advantages to the NUG, they may be reduced or eliminated by having to dispatch the utility's system in a less than economic manner. Furthermore, NUGs may not be located in areas where the system needs generating support. The Company considered approximately 18 proposals from NUGs before making its final decision. TR. Vol. 2, p. 89. These proposals did not present superior alternatives. TR. Vol. 2, p. 93.

Finally, although the purchase power strategy eliminates significant capital outlays, it is not without financial risk to the utility. Similar to the leasing option, financial analysts will consider the present value of the fixed portion of payments to the NUG as debt, thereby lowering interest coverage ratios and jeopardizing bond ratings. TR. Vol. 1, pp. 71-72.

The Company's evaluation process included a series of iterative steps involving forecasting system sales and operations, economic dispatching of plants, simulating financial conditions, tabulating results, and management reviews. Quantitative results were merged with qualitative issues to determine the merits of each generation supply strategy. Generation supply strategies were developed giving attention to operating strategies, fuel supply, construction outlays, environmental compliance, transmission requirements, and operating costs. The evaluations consisted of one or a combination of the three general generation supply strategies. The strategies were measured financially by simulating costs to the customer while maintaining financial stability during the twenty-year planning period. A number of forecast assumptions were made during the evaluation, including regulation and acceptable financial measures to maintain bond ratings, stability and flexibility. TR. Vol. 1, pp. 72-73.

In the evaluation process, consideration was given to both customer and investor issues. These criteria included costs to the customer, fuel source dependency, construction expenditures, new common stock issued, payout of dividends, and coverage of fixed

charges. TR. Vol. 1, p. 73.

Under the peaker strategy, several options were considered, and a best option was determined. However, since the peaker strategy relied on the availability and deliverability of natural gas at specified price levels throughout the next twenty years, and the results of this strategy were not superior to those obtained under the other strategies, the Company concluded the risks associated with the peaker strategy were too great and the peaker strategy was eliminated. TR. Vol. 1, p. 73.

A best option under each of the traditional build and own and purchase strategies was produced.[4] The primary difference between these options is the method by which the Company provides for base load generation needs in the 1996-1997 time frame.

The Company also considered the impact of each generation

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4. Build and Own
Under this option the Company would build and own the Cope power plant, a 385 MW pulverized coal-fired unit, to be completed in 1996. This option calls for short-term purchases of power in the years 1993 through 1995 to mitigate the rate impact of bringing a base-load unit on line. Four ICTs of 99 MW each would be constructed in 1998, 1999, 2000, and 2001 and two coal plants of 400 MW in 2003 and 2007.

Leasing
This option is identical to the build and own alternative except that the Cope power plant is leased instead of owned by the Company.

Purchase
Under the purchase option the base load capacity provided by the Cope power plant in 1996 is replaced by two long-term purchases from NUGs: one purchase of 169 MW in 1997 and another of 180 MW in 1999. Short-term purchases are made from 1993-1996. ICTs of 99 MW each are constructed in 1996, 1997, 1998, 2001 and 2002. Coal plants of 400 MW are needed in 2003 and 2007.

option on customer rates (TR. Vol. 1, pp. 75, 76) and on investors. TR. Vol. 1, pp. 76-80.

Based on its analysis of evaluation results, the Company adopted the build and own option to meet its generating capacity needs. Specifically, this means SCE&G plans to construct and own the Cope coal-powered generating plant which is to be placed into service in 1996. The Company concluded that this alternative will enable the Company to provide competitive rates and reliable services for its customers over the long run, while balancing the numerous operating and financial considerations associated with the decision to add generating capacity.

Based on the record before us, the Commission finds and concludes that SCE&G has carefully considered the generation options available to it, and concludes, that the construction and ownership of a 385 MW, base load coal-powered generating plant best serves the Company, its customers, and investors.

D. Project Location. The Commission finds that the load support aspects of the generation requirements which the Cope Plant is to meet are primarily in the Charleston area, but the plant will also respond to projected needs in the Orangeburg vicinity. TR. Vol. 1, p. 22, TR. Vol. 3, pp. 10-12, 21; Hearing Exs. 6, 10. The Commission finds that the plant is appropriately located to serve these two load centers, and other areas projected for growth and corresponding customer demand. TR. Vol. 2, p. 57. At the same time, the project site is removed from existing Class I areas and coastal wetlands, and, further, many of the negative environmental

impacts can be mitigated. (See discussion of environmental considerations in the section on plant and transmission site selections, infra.) The Commission finds that the project site near Cope is suitable for accommodating the 385 MW unit, as proposed, and attendant operating requirements. TR. Vol. 2, p. 57. Application, Ex. A, Vol. 1, Chpts. 2 & 3. Further, the Commission finds that the infrastructure necessary to support the construction and operation of the unit is readily available or can be reasonably obtained. Application, Ex. 1, Vol. I, Sections 2 & 3.

E. Technology. The Cope plant will be utility grade. TR. Vol. 2, p. 77. There is no dispute in the record regarding plant design and operation. This information is detailed in the Company's Application, Vol. II, Section 3. Trains will deliver coal to the Cope power plant on an existing rail line. A rotary car dumper will unload the coal, and conveyors will transport the coal for storage on the coal pile. A reclaimer will take the coal from the pile to the plant and store it in bunkers sized to hold a 24 hour supply of fuel at 100% load. Five coal feeders will move the coal from the bunkers to the pulverizers, and air, generated by two large fans, will transport the coal to the boiler. The boiler manufacturer has designed the burners to minimize the formation of nitrogen oxide (NOx). TR. Vol. 2, P. 57.

The water used in the plant will be withdrawn from the South Fork Edisto River and treated before the two steam-driven feedwater pumps push the water through seven feedwater heaters and to the boiler. The steam from the boiler will turn the turbine, which, in

turn, drives the generator. The generator output will be transformed to 230,000 volts and transmitted to SCE&G customers. TR. Vol. 2, pp. 57-58.

The plant will contain a dry lime scrubber to remove ninety (90%) percent of the sulfur dioxide from coal which may contain up to 2.2% sulfur. Thus, this plant will have the capacity to burn a range of grades of coal. TR. Vol. 2, p. 58. The dry lime scrubber will have redundancy to assure continuous plant operation in case of a component failure. A chimney, 525 feet tall, will discharge the scrubbed gases to the atmosphere. A concrete cooling tower will cool the water discharged from the plant. The cooling water will be re-used to avoid the potential for thermal pollution to the south fork of the Edisto River. Scrubber and ash waste will be stored in state approved landfills at the plant service area. The plant will include provisions and equipment providing a capability to burn natural gas. This will give a dual fuel capability which has been used extensively in SCE&G's exiting coal-fired plants enabling the Company to burn natural gas if there is a price advantage in doing so. TR. Vol. 2, pp. 58, 77.

The plant will incorporate the latest in proven emission reduction technologies for sulfur dioxide, nitrogen oxide and particulate removal. The dry lime scrubber will remove ninety (90%) percent of the sulfur dioxide. Spray dryers will spray a lime slurry into the gas stream from the plant which will react with the sulfur dioxide to form calcium sulfate, which will be collected by the particulate removal system, called a "bag house".

The bag house will also collect the fly ash which, with the scrubber waste, will be landfilled on the plant site. The advantage of a dry lime scrubber is that it can obtain similar removal rates to a wet scrubber, but will use much less water and is less costly. Low nitrogen oxide burners will be used to reduce the formation of nitrogen oxides in the boiler. TR. Vol. 2, p. 59. See Hearing Ex. 6.

The Integrated Resource Plan (IRP) submitted by SCE&G in September, 1991, discussed alternative sources of power generation. The evaluation addressed fluidized bed combustion, coal gasification, refuse derived fuel, compressed air energy storage, solar photovoltaic cells, stretched-membrane heliostats, wind turbines, nuclear fusion, superconducting magnetic energy storage, geothermal and ocean energy. SCE&G concluded at that time that these technologies were either not commercially available, were more expensive to build, or did not meet the requirement to provide reliable low-cost power to SCE&G customers. TR. Vol. 2, p. 60.

With regard to the Company's decision to use dry scrubbed, pulverized coal technology instead of other technologies, this Commission finds and concludes that SCE&G has reasonably evaluated reliable, proven alternative technologies, evaluated their cost, and considered the availability and cost of the fuels involved. This Commission believes that SCE&G should continue to evaluate new technologies for future generation sources.

The Company's application is for approval of one 385 MW unit, although the Company projects the eventual construction of three

such units. Accordingly, SCE&G has designed certain aspects of the project to support three units. The water intake and discharge structure [Application, Ex. A, Vol. I, Section 3, p. 3-16, 3-17; Figure 3.5.0-1], and waste ponds [Application, Ex. A, Vol. I, Section 3, pp. 3-31 through 3-34], are designed and, when permitted, will be constructed to support three 385 MW units. The scrubber waste storage area is designed and will eventually be permitted for three units, but actual construction will be done for the single 385 MW unit. Application, Ex. A, Vol. II, Section 5, pp. 5-15 through 5-16. The Commission finds and concludes that expenditures attributed to these facilities do not currently represent an unreasonable over-building in the event two additional units are not installed. The nature of these facilities and the fact that there will be a one-time only construction impact on environmentally sensitive areas makes the oversizing of these facilities appropriate. Of course, the Company retains the burden of proof to demonstrate that the actual costs of these facilities are feasible at such time as the Company requests permission to include such costs in its rates. In this docket, the Commission is only approving the appropriateness of the design of the water intake and discharge structure, the waste ponds, and the scrubber waste storage.

The cost of the Cope Plant is approximately $451,074,000, excluding allowance for funds used during construction (AFUDC). TR. Vol. 2, pp. 72, 84, 86; Exhibit 6. The project cost for transmission is approximately $26,000,000. TR. Vol. 2, pp. 75, 84,

86; TR. Vol. 3, pp. 24-26. The plant will be built by Duke/Fluor Daniel pursuant to an Engineer-Procure-Construct (EPC) contract. TR. Vol. 2, pp. 62, 64. The Cope Plant is, on a dollar-per-kilowatt basis, less expensive than comparable utility grade plants constructed during the last several years. TR. Vol. 2, p. 77.

In 1988, the production engineering department of SCE&G began considering the cost of the next increment of base load capacity which the Company would require and assumed, for planning purposes, that this capacity would be provided by a base load pulverized coal plant. TR. Vol. 2, pp. 77-78. Other planning alternatives were simultaneously considered by other departments within the Company. TR. Vol. 2, pp. 61, 78. To initiate this planning process, the production engineering department had informal discussions with architects/engineers who were willing to provide general budgetary costs for a coal plant. One of the companies was Duke Engineering Services. Duke Engineering Services submitted an unsolicited proposal for a 371 MW plant which was less expensive than budgetary numbers received from other companies. TR. Vol. 2, p. 78. SCE&G then prepared an equipment and plant scope list which was sent out to 11 other architect engineering companies with a request that a "plus or minus ten (10%) percent" estimate be provided. Estimates received were compared to the Duke Engineering Services proposal. This proposal continued to be so far below other estimates that it became SCE&G's benchmark by which other proposals were evaluated. TR. Vol. 2, pp. 62, 78. After Duke Engineering Services and Fluor

Daniel Corporation formed Duke/Fluor Daniel, SCE&G's management signed a Memorandum of Understanding, pursuant to which Duke/Fluor Daniel prepared specifications defining the details of the scope and design of the proposed Cope Plant. While SCE&G and Duke/Fluor Daniel worked simultaneously with the technical activities to develop a contract document, the Company continued to evaluate generating alternatives. TR. Vol. 2, p. 79.

The work by Duke/Fluor Daniel in the preparation of the specifications was done at Duke/Fluor Daniel's cost. SCE&G had the right to cancel the Memorandum of Understanding at any time and retained the right to use the specifications at no cost to SCE&G. The specifications were to be of enough detail and quality that they could be used by SCE&G to competitively bid the plant if the original Duke Engineering Services price no longer had an advantage over other estimates. TR. Vol. 2, p. 63, 79. Duke/Fluor Daniel completed the work and gave SCE&G a revised estimate of $879 per kilowatt in 1989 dollars, which was $2 per kilowatt less than the original estimate. TR. Vol. 2, p. 79.

As a further evaluation method, SCE&G hired an architect/engineer to compare the Duke/Fluor Daniel proposal to a recently constructed, competitively bid plant in Virginia. The results of the evaluation by the architect/engineer confirmed that the Duke/Fluor Daniel proposal was less expensive on a dollar per kilowatt basis for a 350 MW plant than the lowest evaluated bid for 400 MW of base load capacity for any unit located in the Southeast. TR. Vol. 2, pp. 64, 79-80. SCE&G improved this price advantage

over the referenced 400 MW plant when it agreed to upgrade the Cope Plant to 385 MW. This upgrade achieved a ten (10%) percent increase in plant output for a five (5%) percent increase in price. TR. Vol. 2, pp. 64, 80.

The Companies which have partnered to build the Cope Plant, a subsidiary of Duke Power Company and Fluor Daniel Construction Company, have excellent reputations in their respective fields. TR. Vol. 2, pp. 68, 81. To manage the contract with Duke/Fluor Daniel, SCE&G formed a Generation Projects Department with responsibility to oversee the technical and commercial aspects of the project. TR. Vol. 2, pp. 65, 82.

The engineer, procure, construct contract between SCE&G and Duke/Fluor Daniel is a comprehensive document setting forth in detail, the requirements and criteria for the design, construction, startup, operator training and testing of the new plant. It defines the risks for each party, the responsibilities of each party, the terms of payment, warranties and guarantees and the remedies for failure to perform. Duke/Fluor Daniel's overall performance and project financial stability is guaranteed by the parent companies, Church Street Capital Corp. (a financial subsidiary of Duke Power Company) and Fluor Corporation.

Under the provisions of SCE&G's contract with Duke/Fluor Daniel, over sixty-six (66%) percent of the contract price is fixed. That is, the price will not increase unless SCE&G expands the scope of the contract or is required to supply more stringent environmental controls. The remaining portion of the contract,

thirty-four (34%) percent, is subject to escalation using pre-determined indices tied specifically to labor and materials in the Southeast, which can directly affect the cost of the plant, rather than general economic indices. For planning purposes, that escalation is assumed to average four (4%) percent. The Company has thus been able to shift two-thirds of the risk of constructing the plant, and all of the schedule and technical risks. TR. Vol. 2, pp. 65-68, 80-81.

The contract provides single point responsibility for a comprehensive material and workmanship warranty and a comprehensive equipment and performance guarantee. TR. Vol. 2, pp. 68 et seq.

Duke/Fluor Daniel has agreed in the contract to guarantee the commercial operation date of May 1, 1996, subject to significant daily penalties. They have also guaranteed the plant performance, capacity output, heat rate, and the ability to dispatch the unit to a twenty-five (25%) percent minimum load, subject to specified monetary damages. The environmental emission limits are guaranteed to meet the contracted values and Duke/Fluor Daniel must spend whatever dollars are necessary to meet the guarantee. TR. Vol. 2, pp. 68-73, 81.

Duke/Fluor Daniel has also agreed to allow SCE&G to participate and review the design of the plant. SCE&G has formed a project team headed by a project manager, technical personnel from engineering and operations, and a contract administrator whose responsibilities are to ensure that Duke/Fluor Daniel fulfills its obligations under the contract. TR. Vol. 2, pp. 65, 81-82.

The Commission, therefore, finds and concludes that the contracting process described above was reasonable and thorough, and that the sole source, engineer-procure-construct contract with Duke/Fluor Daniel has been reasonably investigated and evaluated. Thus, it is appropriate for SCE&G to rely on this contract for the construction of the Cope Plant.

II. Environmental Compatibility.

A. General. On the issue of environmental compatibility, the Company submitted, among other things, as Exhibit "A" to the Application, a four volume Environmental Assessment for Cope Power Plant. This Environmental Assessment (EA) assumed full development of 1,200 MW's of pulverized coal-fired generation at the Cope site. The present application deals only with a single 385 MW unit. In many cases, the impacts for the single unit as well as all three are shown and discussed. In every circumstance, the environmental impacts of three units exceed those for this single unit. Therefore, the EA is more than adequate for consideration of this single unit. The EA addresses all five key elements required by the National Environmental Policy Act (NEPA):

1. The environmental impact of the proposed construction, maintenance and operation of the Cope Power Plant and associated transmission facilities.
2. Unavoidable adverse environmental effects.
3. Alternatives to the Cope Plant and associated facilities.
4. The relationship between local, short-term uses and the maintenance and enhancement of long-term productivity.

5. Any irreversible and irretrievable resource commitments. Application, Exhibit A, Volume I; Executive Summary, pp. ES1-ES4. TR. Vol. 2, pp. 103, 105.

The Commission finds, in accordance with more detailed discussions which follow, that the EA meets the objectives of NEPA through the use of a systematic, interdisciplinary approach to an environmental review, to ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment.

B. Plant Site. The Cope Power Plant site is located in Orangeburg County, South Carolina, approximately 1 1/2 miles southwest of the Town of Cope and near the communities of Cordova (seven miles northeast), Orangeburg (thirteen miles northeast), Rowesville (ten miles east), Bamberg (three miles south), Denmark (five miles southwest), and Norway (seven miles northwest). Application, Exhibit A, Volume I, Section 2.1.1. It is adjacent to the South Fork Edisto River, and property owned by the Company on both sides of the River comprises the Cope Power Plant site. Application, Exhibit A, Volume I, Section 2.1.1 (Figure 2.1.1-3). It was described, and the Commission so finds, that the portion of the Cope Power Plant site which will be specifically dedicated to the electric generating facility (and perhaps ultimately all three units and associated facilities and operations areas) will occupy approximately 550 of the 3,200 acres within the Company property boundary, with the power plant site being made up of approximately

130 acres for the fenced power plant, 20 acres for the water intake and treated effluent discharge corridor, 340 acres for the ash-scrubber waste area, 40 acres for the rail loop outside the fenced power plant, and 20 acres for roads and miscellaneous access. Application, Exhibit A, Volume I, Section 2.1.2 and Figure 2.1.2-1; TR. Vol. 2, pp. 98-99; TR. Vol. 2, pp. 134-135.

The Commission finds that the approximate 3,200 acre size of the Cope Power Plant site represents an appropriate plant site size to accommodate actual construction and operating areas plus prudent buffers. The Commission understands that the Company will be acquiring ownership of additional properties to make up the balance of the ± 3,200 acre site, and that the exact size of the site depends on those final acquisitions.

The existing uses of the proposed site include, among others, hunting and farming, (including tree farming). Application, Exhibit A, Volume I, Section 2.1.3. Between 2,500 and 2,600 acres of the 3,200 acre tract are expected to continue under those same land use patterns. Application, Exhibit A, Volume I, Section 2.1.3. TR. Vol. 2, p. 108.

The Company discussed the impact of the 100 year flood zone on portions of the Project site property, and the Commission finds that it will not impact the Project nor will the Project significantly impact the flood zone. Application, Exhibit A, Volume I, Section 2.1.4. Application, Exhibit A, Volume II, Section 4.1.3.

The Company submitted extensive comments upon the

sociopolitical impacts of the Cope Power Plant discussing, among other things, affected governmental jurisdictions, zoning and land use plans, demography and ongoing land use, the history of the Cope community, regional, cultural, and natural landmarks within a 50 mile radius of the Cope Power Plant site, archaeological and historic sites within the Project boundary, and socioeconomic and public services including, but not limited to, labor force matters, personal income, housing, education, transportation, medical services facilities, fire fighting services, police services, parks and recreation, and other infra-structure issues. Application, Exhibit A, Volume I, Sections 2.2.1 through 2.2.8. The Commission finds that there will be sociopolitical impacts, but finds that those impacts as described, both positive and negative, are not such that they, alone or in combination with other impacts, tip the balance against approving the Cope Project. The Commission finds that there will be very significant, positive financial impact on Orangeburg County and the communities near the Cope Project site. The Company provided extensive descriptions of the bio-physical environment of the Cope Power Plant area. Exhibit A, Volume 1, Sections 2.3.1 (Geology), 2.3.2 (Subsurface Hydrology), 2.3.3 (Site Water Characteristics and Area Water Uses), 2.3.4 (Surficial Hydrology and Water Quality), 2.3.5 (Land Use and Vegetation), 2.3.6 (Ecology), 2.3.7 (Meteorology and Ambient Air Quality), and 2.3.8 (Noise). The Company also included a discussion of Other Environmental Features, including the recently designated Ashley-Combahee-Edisto Basin (ACE Basin) National Estuarine

Research Reserve. Application, Exhibit A, Volume I, Section 2.3.9, at page 2-43.

The Company submittal with regard to the site and vicinity characterization for the Cope Plant Project includes detailed textual materials and tables and figures illustrating and/or listing data in support of the textual material.

C. Permits.

The Company's submittal in Exhibit A to the Application contains an extensive discourse on the specifics of the proposed Cope Plant and associated facilities in Volume I, Section 3. Of particular interest to the Commission are the provisions dealing with pollution control systems. With regard to air emissions, the Cope Power Plant is subject to the permitting requirements of the prevention of significant deterioration (PSD) program for air emissions. PSD requirements apply because the Cope Power Plant is classified as a "major" new stationary source and is located in an area classified as "in attainment of National Ambient Air Quality Standards (NAAQS) for all criteria pollutants." The Plant must meet PSD requirements. What those requirements are will be determined through a best available controlled technology (BACT) determination to be made by the South Carolina Department of Health and Environmental Control (DHEC), as defined under the PSD Regulations. Application, Exhibit A, Volume I, Section 3.4. See also, U. S. Environmental Protection Agency Regulations, 40 CFR 52.21. The Plant systems and facilities described in Section 3 of Volume I of Exhibit A are those systems and facilities designed to

meet the requirements of the BACT Analysis for Air Pollution Control. The Company has applied for a PSD Permit from DHEC and expects soon to receive that Permit. TR. Vol. III, p. 102.

Based on the record before it, the Commission recognizes that there will be certain impacts associated with the air emissions from the Cope Plant and the environmental control systems put in place to manage those emissions and pollution control byproducts. The Commission concludes that the level of emissions permitted by DHEC will be acceptable.

Discharges of heated water, coal pile runoff, and other sources of water requiring treatment before discharge require that the Company also seek permits from DHEC under the National Pollutant Discharge Elimination System (NPDES) Permit Program operated by DHEC. DHEC operates the NPDES Permit Program in South Carolina as a delegated state. The Permits the Company is seeking from DHEC under the NPDES Program will specify limitations for pollutants being discharged into the South Fork Edisto River. The limitations will be such as to ensure water quality standards will be maintained. Additional Permits also will be required for the construction and operation of sewage and conventional waste treatment facilities, the discharges from which also are governed by NPDES Permit conditions. Application, Exhibit A, Volume II, Section 9.2.2.2, p. 9-3. The Commission finds that there will be impacts associated with the discharge of effluent from the Cope Plant waste water treatment systems, including cooling water returned to the South Fork Edisto River, but that those impacts

will be acceptable so long as those discharges remain within limits specified in the NPDES permits issued by DHEC.

The Company furthered the detail of its description of the site and vicinity characterization through the inclusion of maps, drawings, graphs and charts. The Commission finds the information submitted by the Company relating to the site and vicinity characterization to be extensive, thorough and adequate to support the Commission's findings hereinafter stated with regard to this site, especially when coupled with the testimony in this case.

The Cope Plant itself is to be located about one and one-fourth (1 1/4) miles north of the South Fork Edisto River. Application, Exhibit A, Volume I, Section 3.2. TR. Vol. 4, pp. 75-76.

In the Company's discussion of the bio-physical environment, it made a number of specific disclosures on issues relevant to and potentially affecting the environmental suitability of the Cope Project and which became issues during the hearing, through testimony sponsored by the Office of the Consumer Advocate. One of these issues is the water flow in the South Fork Edisto River and in the Edisto River Sub-Basin as a whole and the consumptive use thereof. The present major water uses in the Edisto River Sub-Basin include public supply (82 mgd), agricultural irrigation (43 mgd), and electric power generation (162 mgd). Application, Exhibit A, Volume I, Section 2.3.3.4, at pp. 2-19 and 2-20. Table 2.3.3-3. This includes the Company's Canadys Steam Station, which is presently the only electric power generating station in the

Edisto River Sub-Basin, where most of the water is used for once-through cooling and returned to the Edisto River. This station is located in the lower portion of the Edisto River, approximately 30 miles downstream of the Cope Power Plant site intake and discharge. Application, Exhibit A, Volume I, Section 2.3.3.4, at p. 2-20. Although representing nearly sixty percent (60%) of the 1990 projected water use in the Edisto River Sub-Basin, the consumptive use for electric power generation represents only about eleven and one-half percent (11 1/2%) of the total consumptive use. Public water supply and agricultural irrigation uses account for 87% of total consumptive use. Exhibit A, Table 2.3.3-3. For the South Fork Edisto River near Denmark, the average annual stream flow is given by the U.S.G.S. as 764 cubic feet per second. Application, Exhibit A, Volume I, Section 2.3.4.1, at p. 2-20. Low flow conditions in the South Fork Edisto River are characterized by the 7Q10 flow rate of 203 cfs with the minimum flow of record occurring on July 12, 1990 at Denmark of 133 cfs. Application, Exhibit A, Volume I, Section 2.3.4.1, at p. 2-21.

Section 3.5 of Volume I of Exhibit A to the Application contains a thorough description of plant water use showing, among other things maximum water use for three-unit operation at the Cope Power Plant and a Plant water balance associated therewith as well as Plant water balance for one unit operation. Application, Exhibit A, Volume I, Section 3.5 Figures 3.5.0-1 and 3.5.0-2. This reveals that for three units, a raw water source of 18,900,000

gallons per day would be necessary with a resulting discharge back into the South Fork Edisto River of 4,810,000 gallons per day. For a single unit, which is what is now under consideration by the Commission in these proceedings, the raw water source requirement will be 6,370,000 gallons per day with a discharge of 2,630,000 gallons per day for a net consumptive use of 3,740,000 gallons per day. The relative locations of the intake and discharge structures are shown in a number of places, including Application, Exhibit A, Volume I, (Figures 3.2.0-1 and 3.8.1-1).

The South Fork Edisto River water issue raised by the Consumer Advocate was whether during periods of low water in the South Fork Edisto River, there would be enough water in the River to operate the Plant while at the same time leaving enough water for fish during periods of great stress. TR. Vol. 4, p. 22. In addition to the Section on Water Use in Volume I of Exhibit A, the Company also submitted a detailed discussion of the effects of Plant operation, including the effects on the South Fork Edisto River in Section 5.

In spite of the volume of information in the Company's Environmental Assessment (Application, Exhibit A), the Wildlife and Marine Resources Department continued to express concerns about the need for a site-specific in-stream flow study to resolve fully that Department's concerns about the adequacy of the flow in the South Fork Edisto River to support both the Plant operation and a balanced, healthy fish population. Exhibit 17, TR. Vol. 4, p. 22; Exhibit 19, TR. Vol. 4, pp. 50-55. The witness from the Wildlife and Marine Resources Department acknowledged that it would only be

at the point at which a Certificate for the Plant was issued officially designating the Cope site as an approved site for the power plant that his agency would speak about mitigation, including in-stream flows. TR. Vol. 4, p. 79, l. 14-24. In particular, in response to a question from the Commission Staff Counsel concerning possible mitigation for in-stream flow problems, the witness stated that ". . . the Company has contacted us to talk in more detail about the in-stream flow problem, and when the site is approved, when a Certificate is granted, we stand ready to consult with the Company on that mitigation process." TR. Vol. 4, p. 33. The fact that such site specific in-stream flow studies have not been performed does not render the Environmental Assessment and the Company's Application in this matter deficient. The Commission fully expects SCE&G to work with the Wildlife and Marine Resources Department to supply any information the Department believes is necessary and to resolve any environmental concerns the Wildlife and Marine Resources Department may have. The Department's witness acknowledged that with regard to all the other applicable licenses, permits, and approvals required for the Cope Project, the Wildlife and Marine Resources Department has participatory responsibility through the comment process, that it would avail itself of the opportunity to make its views known, that it anticipated that the Company would be responsive to their concerns, and that any permits issued by those agencies would take into account the views and opinions of the Wildlife and Marine Resources Department. TR. Vol. 4, p. 80-81.

With regard to the consumptive water use issue, the Commission reminds the Company that this review is for a single, 385 MW unit, and that at such time as the Company applies for a certificate for a subsequent unit, this issue will be revisited and the Commission expects to hear from the Department as well as others on this issue.

The Company included in its Environmental Assessment (Application, Exhibit A) extensive discussion of the site and plant design alternatives. The Commission concludes that the plant design alternatives selected by the Company, among those considered, are reasonable. Application, Exhibit A, Volume II, Section 7.2.

With regard to the alternate sites considered by the Company, the testimony of W. E. Moore at TR. Vol. 2, p. 97-144 and Section 7 of the Environmental Assessment, (Application, Exhibit A, Volume II, Section 7), and the site selection study prepared in 1982 by the Engineering and Consulting Firm of Dames & Moore filed in this docket in response to Question 1-20 of the Consumer Advocate's Interrogatories (Set No. 1) have given a comprehensive presentation of the power plant siting process through which the Cope site ultimately was selected by the Company. The power plant siting process took place over a fifteen (15) year period. Application, Exhibit A, Volume II, Section 7.1, p. 7-1. The objective of the site selection process was to locate the most appropriate site for construction and operation of base load coal-fired plant based on environmental, technical and economic factors. Application,

Exhibit A, Volume II, Section 7.1.1, p. 7-1. The initial siting study, which was begun in December of 1981, involved a seven step process as follows:

1. Establishment of the region (geographic) of interest. In this case, it encompassed the entire SCE&G service area plus 20 miles beyond.
2. Development of issues of concern (mandatory, restrictive, and discretionary) pertinent to the siting of a plant. The site selection issues are set forth in Application, Exhibit A, Volume II, Section 7, (Figure 7.1.2-2).
3. Screening the region of interest through the issues identified in Step 2. This yielded 35 siting areas with air quality, biology, land use, socioeconomic, water quality, water supply, and fuel transportation issues being critical in this stage.
4. Identification of specific sites within each site area with cataloging, categorization, and evaluation of specific attributes for each site. This resulted in a set of 14 potential sites selected from the initial 35 site areas.
5. Development of separate environmental and economic assessments for each of the 14 potential sites based on site reconnaissance, visits, literature review, and contacts with local and State agency personnel.
6. Rating and ranking of each site according to specific economic and environmental criteria, thus identifying

candidates for further consideration.

7. Development and compilation of site evaluation data at an appropriate level of detail for initial decisions Application, Exhibit A, Volume II, Section 7.1.2.1.

This initial seven step process resulted in identification of fourteen candidate sites for further consideration and economic assessment. Application, Exhibit A, Volume II, Section 7.1.2.1, p. 7-3. The list was then pared to nine sites, then five, then one. These later evaluations followed similar, comprehensive, site-specific analyses, and incorporated financial, system planning, and other considerations. TR. Vol. 2, p. 106.

The portion of the siting process which appeared to generate some level of discomfort with the South Carolina Wildlife and Marine Resources Department was the environmental site evaluation. TR. Vol. 4, pp. 12-21. Apparently, the Wildlife and Marine Resources Department accepted the process and the results of the process insofar as it was used to winnow the number of sites down to nine intermediate alternatives. TR. Vol. 4, p. 13-15. It was, however, going from nine sites to five sites where the Department apparently had questions. TR. Vol. 3, p. 15. In particular, the Department's witness questioned the elimination of a North Fork Edisto site (Rowesville) and inclusion of an Allendale site. TR. Vol. 4, pp. 16-18, and 27. The concern of the Department regarding the elimination of the North Fork Edisto site was that, in environmental ranking, ". . . it's not that far in its rating from the Cope site." TR. Vol. 4, p. 16. The Department is concerned

that the Cope site is separated from the North Fork site in rating by only about four points and the Department questions whether the process of making environmental evaluations, which involves ". . . a great deal of work on the part of a few people, and a great many value judgments made by those people expressed as a single number . . ." is able to make distinctions that fine. TR. Vol. 4, p. 16.

In its environmental assessment, SCE&G relied, in part, on the South Carolina Rivers Assessment. This is a report published in 1988 by the South Carolina Water Resources Commission identifying various sites throughout the State by their potential for industrial/non-industrial, recreational and other potential use categorizations. The Commission takes judicial notice of this document. That document was a collaborative effort between government and industry, and the Wildlife and Marine Resources Department had major input into it. According to the South Carolina Rivers Assessment, the South Fork Edisto River in the vicinity of the Cope site was ranked at Class 1 (highest classification) for industrial development potential, while the North Fork Edisto River was ranked at Class 3 (lower) for this attribute. TR. Vol. 4, p. 47.

With regard to the inclusion of the Allendale site, the Wildlife and Marine Resources Department felt that ". . . it [the Allendale site] was simply left in to have an adequate number of sites to evaluate." TR. Vol. 4, p. 19. This conclusion was apparently based upon a reading of a portion of the initial site

evaluation report prepared by Dames & Moore and reflected in the Application, Exhibit A, Volume II, Section 7, Table 7.1.3-7 and Figure 7.1.3-3. However, the Department's witness acknowledged that the study and the figure and chart were close to ten years old and that the text of the Environmental Assessment made it clear that the chart and the figure did not reflect the current evaluation of the state of those sites. TR. Vol. 4, p. 60-61. He also acknowledged that a number of things had changed since the initial site evaluation and since that chart and that figure had been produced, which very well could have changed the evaluation to justify fully the reexamination of the Allendale site and the ultimate decision on Cope. This would include matters such as heightened concern with protecting wetlands. TR. Vol. 4, p. 66-67. This could have affected not only the Allendale site, but all of the sites. In any event, the Department's witness acknowledged that the Company's design of the location of the Cope Plant ". . . looks like it does a good job of avoiding impacts to wetlands and confining the unavoidable impacts to the site." TR. Vol. 4, p. 72. He also acknowledged that this was a fact which would not have been known during an initial screening in 1982. TR. Vol. 4, p. 72.

With regard to the site evaluation and selection processes employed by the Company, the Commission finds them appropriate for the purpose of determining the suitability of the Cope site as a location for the proposed 385 MW generating plant. (Although as stated above, the Dames & Moore study is deficient in several ways, this Commission believes that the data presented is the best

available on the subject at the current time.) The Commission acknowledges and accepts, as does the South Carolina Wildlife and Marine Resources Department that the process, referred to at times in the proceedings as a Modified Delphi Process, is a useful tool for evaluating the environmental components of the decision making process for the location of a plant. The Commission does not find the concerns expressed by the Wildlife and Marine Resources Department to be a sufficient basis for rejecting the Cope site or delaying its decision in this proceeding, especially in view of the continuing permitting processes of which the Department of Wildlife and Marine Resources, as well as other agencies, are active participants.

D. Transmission. The interconnection of the Cope Plant to the Company's transmission grid will be through the construction of the Cope/Canadys 230kv Line and the Cope/Orangeburg 230kv Line. The Company's Environmental Assessment (Application, Exhibit A), in Section 6, contains a general description of the corridor selection process, the existing environment, the construction impacts for the lines, and the operational and maintenance impacts. On a straight-line basis, the Cope Power Plant will be 14 miles southwest of the Orangeburg Substation and 32 miles northwest of the Canadys Station Switch Yard, the points at which the Plant will be tied into SCE&G's transmission grid. Application, Exhibit A, Volume II, Section 6.1, p. 6-1; Figure 6.1.0-1. The line structures will either be concrete or steel H-frame or single pole construction with structures approximately 600 feet apart. The

Cope-Orangeburg Line will have approximately 185 structures and the Cope-Canadys Line will have approximately 300 structures. Application, Exhibit A, Volume II, Section 6.1.1, p. 6-1. The newly acquired right-of-way will be 170 feet in width to allow for corridor sharing with future transmission lines as required. Where upgrade or rebuilds to existing lines provide the transmission access, an additional 30 feet width of right-of-way will be acquired. Application, Exhibit A, Volume II, Section 6.1.1.

The corridor selection process was one which involved a voluntarily initiated agency consultation process by the Company and the first time utilization of the Geographical Information System Data Base (GIS Data Base) developed by the South Carolina Water Resources Commission. A full description of the corridor selection is contained in Application, Exhibit A, Volume II, Sections 6.1.2., et seq. A number of tables (Tables 6.2.2-1 through 6.2.2-6) and figures (Figures 6.1.0-1 through 6.1.3-3) accompanied the text of Section 6 and helped to provide a clear depiction of the issues relevant to the determination of the environmental compatibility and the necessity for the transmission routes and facilities selected by the Company. Moreover, in Volume IV of the environmental assessment (Application, Exhibit A) in Appendix 10.8, separate, complete, and rigorous Environmental Assessments for the Cope to Orangeburg 230kv Transmission Line and the Cope to Canadys 230kv Transmission Line are included. The conclusions of each Environmental Assessment are the same: "The proposed . . . transmission line will have no significant adverse

effects on land use, vegetation, wildlife, threatened or endangered species. The positive effects of increased reliability of electrical power and of using areas disturbed by prior activities in lieu of undeveloped and undisturbed land will compensate for the minimal visual effects and temporary effects associated with construction of the proposed line." Application, Exhibit A, Volume IV, Appendix 10.8, Environmental Assessment Cope to Orangeburg 230kv Transmission Line, p. 27 and Environmental Assessment Cope to Canadys 230kv Transmission Line, p. 28. We find that the Company's plans for connecting the Cope Plant with the Company's power grid represents an acceptable alternative for providing voltage support in areas of the Company's service area in need of that additional support and further that the Company's use of already disturbed land (existing transmission line routes) represents the best alternative for making those connections and providing that support, given the approved location of the plant at Cope.

The Wildlife and Marine Resources Department, in a comment letter, noted and raised concerns about the presence of a Federally endangered plant species Oxypolis canbyi (Canbyi dropwort) in one of the proposed transmission line corridors. Exhibit 17. The Wildlife and Marine Resources Department's concerns in this regard, however, are simply that "extreme care should be used in the area of this species and appropriate mitigation should be required as a part of any permit to widen this right-of-way." Exhibit 17. Asked by the Commission's counsel to give specific examples of some of the appropriate mitigation the Company could do to address the

issue regarding the Canbyi dropwort, the Department's witness testified as follows:

> There are two specific items of mitigation that the Company could do, and we recommend that they proceed to. One, as we discussed, taking care in construction of additional power lines around the habitat of the Canbyi dropwort, and that can be accomplished relatively easily in consultation with our experts and we would recommend that be done. Probably a complete survey for all the individual plants, something on the timing of construction, and something about locating those plants and flagging them, and taking care to keep equipment out of the area or in any way altering the draining of the habitat for the plant. And, as the Company has indicated to us, that can be done. TR. Vol. 4, p. 32.

It would appear that the concern regarding the endangered species is one which quite satisfactorily can be handled as a matter of coordination between the Department and the Company, and the Commission so finds.

Based on the environmental assessment and testimony of record in this case, the Commission finds that the proposed Cope to Orangeburg and Cope to Canadys 230kv Transmission Lines will have no significant adverse effects on land use, vegetation, wildlife, and threatened or endangered species. We further find that the increased reliability of electrical power and of using areas disturbed by prior activities in lieu of undeveloped and undisturbed land will compensate for the minimal visual effects and temporary land form disturbance effects associated with construction of the proposed lines. Of course, the Company must obtain requisite permits from those other agencies involved in the permitting processes, and the Commission holds that the Company must make all reasonable cost-effective efforts to mitigate

negative environmental impacts.

The Consumer Advocate questioned whether or not the Company examined an option of a double circuit transmission line to Orangeburg and reenforcing the feeds to the Charleston area through some method other than the proposed method. Mitchell S. Tibshrany, Jr., Vice President of Transmission and Distribution Engineering and Power Delivery for the Company testified that:

> There is no other method to reenforce the feeds in Charleston, other than bringing more capacity to Charleston. The only way you're going to bring more capacity to Charleston is to build a transmission line, or put in a generating station, and we are talking about a base load generating station, in case you lose the 560 MW at A. M. Williams. From the transmission standpoint, ideally, you put a plant right in the peninsula of Charleston, or in the close proximity, which is not realistic with the air problems there. So, putting it at Cope and building a transmission line to support the area is the best alternative that we have. TR. Vol. 3, p. 34.

The Commission finds that the selection of two single circuit lines from Cope to Orangeburg and Cope to Canadys represents a reasonable alternative.

The Consumer Advocate questioned whether the Company employed the concept of "prudent avoidance" with regard to electromagnetic fields. TR. Vol. 3, p. 29. As explained by Mr. Tibshrany, electromagnetic fields actually involve two matters--electric fields and magnetic fields. As Mr. Tibshrany reflected, much research currently is being done on the issue of magnetic fields and whether or not there is a problem and if so, at what levels problems might exist. When SCE&G does a design for a line, ". . .[it] consider[s], everything else being equal, a

configuration that will minimize the amount of magnetic field on line." TR. Vol. 3, p. 31. The Company position regarding electric and magnetic fields is a part of the record of these proceedings as the Company's response to the Consumer Advocate Interrogatory Set No. 1, Question 1-18, which is part of hearing Exhibit 3. The Commission accepts that position at this point in the stage of the development of the scientific record regarding this subject.

CONCLUSIONS OF LAW

Based on the foregoing findings and analyses, the Commission finds and determines:

1. The Company's application in this docket complies with §58-33-10 et seq. (1976);

2. The Company has sustained its burden of proof in this case by substantial evidence in the record, as particularized above, in establishing:

   a. the basis of the need for the facility;

   b. the nature of the probable environmental impact;

   c. that the impact of the facility upon the environment is justified, considering the state of available technology and the nature and economics of the various alternatives and other pertinent considerations;

   d. the facilities will serve the interests of system economy and reliability;

e. there is reasonable assurance that the proposed facility will conform to applicable state and local laws and regulations; and

f. public convenience and necessity require the construction of the facilities.

IT IS, THEREFORE, ORDERED:

1. That the Certificates of Environmental Compatibility and Public Convenience and Necessity applied for in this docket are granted.

2. That this Order shall remain in full force and effect until further Order of the Commission.

Marjorie Amos-Graves
Chairman

ATTEST:

Charles W. Dalton
Executive Director

(SEAL)